

# TECHTALK DESIGN ADVICE SERIES

## CONTINUOUS-FLEX CABLE CONSTRUCTION

### The Bundling Versus Layering Technique

Flexible cables constructed in layers are significantly cheaper to produce, therefore many manufacturers offer cables with this low-cost design. However, such flexible cables are often constructed without attention to pitch length, pitch direction or center-filling material and typically have fleece wraps and binders with a tube-extruded jacket.

These types of cables may provide sufficient support in certain short-travel applications. However, in a long-travel, gliding or demanding-flex application, they tend to fatigue and their insulation and jacket compounds lose their tensile and elongation properties. This greatly reduces service life. As these materials break down, the cable core is compromised and the torsional forces of the cabled conductors release and untwist in parts of the cable. This causes a 'corkscrew' effect.



The risk of such problems is increased with cables that have multiple layers (usually more than 12 conductors).

In the majority of igus<sup>®</sup>, Chainflex<sup>®</sup> cables, the conductors are bundled rather than layered to eliminate these problems. The wires are twisted with a special pitch length and the resulting conductors are cabled into bundles. For large cross sections, this is done around a strain relief



### YOUR CONTACT



Don Nester

Product manager, Chainflex<sup>®</sup>  
continuous-flex cables

[DNester@igus.com](mailto:DNester@igus.com)

>> [Subscribe to e-newsletter](#)

>> [Contacts in your location  
\(on-site within 24-48 hours\)](#)

>> [Request catalogs / free  
samples](#)

>> [myigus](#)

>> [myCatalog](#)

igus Inc.

PO Box 14349

East Providence, RI 02914

P. 1-800-527-2747

F. (401) 438-7270

[sales@igus.com](mailto:sales@igus.com)

[www.igus.com](http://www.igus.com)

element. The conductors are then bundled around a tension-proof center.

The multiple bundling of the conductors changes the inner radius and the outer radius of the bent cable several times at identical intervals. Pulling and compressing forces balance one another around the highly-tensile center cord, which provides the necessary inner stability. As a result, the cable core remains stable even under maximum bending stress.



### Useful Links

[Learn more: Chainflex® continuous-flex cables](#)

[Request catalog or sample](#)